

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
10 March 2005 (10.03.2005)

PCT

(10) International Publication Number
WO 2005/021577 A3

- (51) International Patent Classification⁷: **A01H 5/00, C07K 5/00, C07H 21/02, C12N 5/14, 15/11, 15/82, 15/87**
- (21) International Application Number:
PCT/US2004/025144
- (22) International Filing Date: 2 August 2004 (02.08.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/491,939 1 August 2003 (01.08.2003) US
- (71) Applicant (for all designated States except US): **UNIVERSITY OF TENNESSEE RESEARCH FOUNDATION [US/US]; 1534 White Avenue, Suite 403, Knoxville, TN 37996-1527 (US).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **MULLIN, Beth, C. [US/US]; 6641 Cate Road, Knoxville, TN 37911 (US). GUPTA, Rakesh, Kumar [IN/IN]; 48 Kailash Hills, East of Kailash, New Delhi 110065 (IN). DOBRITSA, Svetlana, V. [RU/US]; 18105 27th Drive S.E., Bothell, WA 98012-9338 (US).**
- (74) Agents: **EISENSCHNEK, Frank, C. et al.; Saliwanchik, Lloyd & Saliwanchik, A Professional Association, P.O.Box 142950, Gainesville, FL 32614-2950 (US).**
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
17 November 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/021577 A3

(54) Title: NOVEL PLANT GLYCINE AND HISTIDINIE-RICH METAL-BINDING PROTEIN FAMILY AND USES THEREOF

(57) Abstract: The subject invention provides materials and methods for the detection and bioremediation of metals from the environment. Specifically, the subject invention provides polynucleotides and polypeptides that bind to a variety of metals. The subject invention provides transgenic plants containing polypeptides according to the subject invention as well as vectors and genetic constructs that provide polypeptides, or fragments thereof, that are capable of binding various metals that can be found in the environment or at contaminated sites.